

Amendments to the Claims:

No amendments to the claims have been made in this response. This listing of claims as previously submitted will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (previously amended) A method for determining a condition of an entity comprising:
selecting a set of volatile markers which are characteristic of a condition and which will be found in a gaseous emanation from the entity;
non-invasively detecting these volatile markers in the gaseous emanation from the entity;
processing the detected marker data in an artificial neural network that includes a fuzzy filter system.
2. (previously amended) The method for claim 1 further comprising further processing the detected marker data with a correction algorithm to eliminate environmental contributions to the markers.
3. (previously amended) The method of claim 1 wherein the volatile markers are detected using an artificial olfactory system.
4. (previously amended) The method of claim 1 wherein the detected marker data is processed with an algorithm which intelligently adapts to an individual entity.
5. (canceled)
6. (original) The method of claim 1 wherein the entity is selected from the group consisting of living humans, other living animals or organisms, and non-living entities.

7. (original) The method of claim 6 wherein the entity is a living human and the volatile markers are characteristic of a disease or other medical condition.

8. (original) The method of claim 7 wherein the disease is selected from the group consisting of diabetes, cancer, mental illness, ulcers, and HIV.

9. (withdrawn, should be rejoined) The method of claim 6 wherein the entity is food and the volatile markers are characteristic of food degradation.

10. (original) The method of claim 1 wherein the markers are selected from supermarkers which correlate substantially with a single condition, and collective supermarkers which comprise of a set of secondary markers which individually correspond to more than one condition but collectively correspond to a single condition.

11. (previously amended) A method for determining a disease or other medical condition of a person comprising:

selecting a set of volatile markers which are characteristic of the disease or other medical condition and which will be found in the exhaled breath or other gaseous emanation from the person;

non-invasively detecting these volatile markers in the exhaled breath or other gaseous emanation from the person;

processing the detected marker data in an artificial neural network that includes a fuzzy filter system.

12. (previously amended) The method in claim 11 wherein the volatile markers are detected using an artificial olfactory.

13. (original) The method of claim 12 wherein the detected marker data is processed with an algorithm adapted to an individual person by training the neural network with calibration data from the person.

14. (previously amended) The method in claim 11 further comprising further processing the detected marker data with a correction algorithm to eliminate environmental contributions to the markers.
15. (original) The method of claim 14 where the environmental correction of detected markers is performed by fitting a minimum of three measured points to a pre-established wash-out curve for each marker.
16. (original) The method of claim 11 wherein the disease is diabetes and the markers are selected to measure the destruction or deterioration of islet cells.
17. (original, withdrawn, should be rejoined) The method of claim 11 wherein the disease is diabetes and the markers are selected to measure the destruction or deterioration of cell membranes by lipid peroxidation or protein oxidation.
18. (original, withdrawn, should be rejoined) The method of claim 17 wherein the markers are used to predict a rise in glucose preceding the actual rise in glucose.
19. (original, withdrawn, should be rejoined) The method of claim 17 wherein the cell membranes are erythrocyte cell membranes.
20. (original) The method of claim 16 wherein the markers are used to detect an overeating condition.
21. (previously amended, withdrawn, should be rejoined) The method of claim 17 wherein the markers are selected from the group consisting of: carbon dioxide (CO₂), acetone (CH₃COCH₃), hydrogen peroxide (H₂O₂), ethane (C₂H₆), ethanol, pentane (C₅H₁₂ or methylbutane), pentanol, isoprene (C₅H₈, 2-methylbuta-1,3-diene), hexanal (C₆H₁₂O or caproaldehyde or n-caproic aldehyde), propanal (C₃H₆O or propional or

propionaldehyde), pentanal ($C_5H_{10}O$ or valeral or valeraldehyde), butanal (C_4H_8O or butyraldehyde), 2-methylpropene (C_4H_8 or isobutene or i-butene), 2-octenal, 2-nonenal, 2-heptenal, 2-hexenal, 2,4-decadienal, 2,4-nonadienal, methyl 2,3-dihydroindene ($C_{10}H_{12}$), dimethylnaphthalene ($C_{12}H_{12}$), alkylbenzene ($C_{15}H_{24}$), n-propylheptane ($C_{10}H_{22}$), n-octadecane ($C_{18}H_{38}$), n-nonadecane ($C_{19}H_{40}$), hexadiene (C_6H_{10}), cresol (C_7H_8O), sabinene ($C_{10}H_{16}$), methyl heptanol ($C_8H_{18}O$), methyl ethyl pentanol ($C_8H_{18}O$), trimethylpentanol ($C_8H_{18}O$ or ethylhexanol or isooctanol), decanol ($C_{10}H_{22}O$), dodecanol ($C_{12}H_{26}O$), and alkyl dioxolane ($C_6H_{12}O_2$).

22. (original, withdrawn, should be rejoined) The method of claim 11 wherein the markers are selected to measure the effect of an increase of free radicals over a normal level wherein the increase of free radicals is related to the disease or other medical condition.

23. (previously amended) Apparatus for detecting the condition of an entity comprising: a volatile marker detector for non-invasively detecting a set of markers which are characteristic of a condition and which will be found in a gaseous emanation from the entity;
an artificial neural network for processing detected volatile marker data and including fuzzy filters associated with at least one of the input layer and a hidden layer of the artificial neural network.

24. (previously amended) The apparatus of claim 23 wherein the volatile marker detector is an artificial olfactory system.

25. (previously amended) The apparatus of claim 24 wherein the artificial neural network includes an algorithm adapted to the individual entity.

26. (original) The apparatus of claim 23 wherein the volatile marker detector is positioned in or connected to a microwave oven.

27. (original) The apparatus of claim 23 further comprising a heater operatively connected to the volatile marker detector to refresh the detector.

28. (original) The apparatus of claim 27 wherein the detector comprises an array of sensors, and the heater is connected to either the array or to individual sensors.

29. (previously amended) The apparatus of claim 23 wherein the artificial neural network comprises an input layer, an output layer and at least two hidden layers between the input and output layers, each layer comprising a plurality of nodes, wherein the nodes of at least the second hidden layer comprise fuzzy filters.

30. (original, withdrawn, should be rejoined) The method of claim 6 wherein the volatile markers are characteristic of *E. Coli*, *H. Pylori*, *Salmonella*, *Staphylococcus aureus*, or *Bacillus anthracis*.